

WHAT IS CLAIMED IS:

1. A network monitoring and controlling apparatus for monitoring and controlling a transmission network formed by a plurality of transmission apparatus, said network monitoring and controlling apparatus comprising:

a path information storing unit for storing path information on an entrance point for inputting data, an exit point for outputting said data, and a path via point for relaying said data, regarding a path through which said data passes and which path connects a transmission apparatus for inputting said data to said transmission network with a transmission apparatus for outputting said data from said transmission network;

a quality information periodic collection unit for periodically collecting quality information of a channel corresponding to said entrance point and a channel corresponding to said exit point;

a quality deterioration detecting unit for determining whether or not quality of the path is deteriorated on a basis of the quality information of said entrance point and said exit point;

a path via point searching unit for, when said quality deterioration detecting unit determines that said quality of the path is deteriorated, searching said path

information storing unit and obtaining information on said path via point of the path deteriorated in quality;

a path via point quality information collection unit for collecting quality information of a channel associated with to said path via point on a basis of the information on said path via point; and

a quality deterioration point identifying unit for determining whether or not a deteriorated path via point is present on a basis of the quality information of said path via point.

2. The network monitoring and controlling apparatus as claimed in claim 1,

wherein said path comprises an active path and a reserve path, and said path via point quality information collection unit collects quality information of channels corresponding to path via points of said active path and said reserve path.

3. The network monitoring and controlling apparatus as claimed in claim 2, further comprising a quality comparison/changeover unit for determining whether or not said active path is deteriorated in quality as compared with said reserve path by comparing quality information of said active path with quality information of said reserve path, and effecting control

to change over to said reserve path when said quality comparison/changeover unit determines that said active path is deteriorated in quality as compared with said reserve path.

4. The network monitoring and controlling apparatus as claimed in claim 3,

wherein said quality information is a numerical value that does not decrease as said data is relayed via the path via point of said path, and said quality deterioration detecting unit detects quality deterioration by comparing a first difference value between the quality information of said entrance point and the quality information of said exit point of said path with a first threshold value.

5. The network monitoring and controlling apparatus as claimed in claim 4,

wherein said quality deterioration detecting unit determines that the quality of the path is deteriorated when a consecutive number of times said first difference value exceeds said first threshold value exceeds a predetermined detection number.

6. The network monitoring and controlling apparatus as claimed in claim 4,

wherein said quality deterioration detecting unit

determines that the quality of the path is deteriorated when a total number of times said first difference value exceeds said first threshold value exceeds a predetermined detection number within a predetermined determination number.

7. The network monitoring and controlling apparatus as claimed in claim 3,

wherein said quality comparison/changeover unit determines whether or not said active path is deteriorated in quality as compared with said reserve path on a basis of quality information at present and in a past of said active path and said reserve path.

8. The network monitoring and controlling apparatus as claimed in claim 4,

wherein said quality comparison/changeover unit determines whether or not said active path is deteriorated in quality as compared with said reserve path by comparing a second threshold value with a second difference value between a value based on quality information at a present time of the path via point of said active path and a value based on quality information at the present time of the path via point of said reserve path.

9. The network monitoring and controlling

apparatus as claimed in claim 8,

wherein said quality comparison/changeover unit determines whether or not said active path is deteriorated in quality as compared with said reserve path when a consecutive number of times said second difference value exceeds said second threshold value exceeds a predetermined detection number.

10. The network monitoring and controlling apparatus as claimed in claim 8,

wherein said quality comparison/changeover unit determines whether or not said active path is deteriorated in quality as compared with said reserve path when a total number of times said second difference value exceeds said second threshold value exceeds a predetermined detection number within a predetermined determination number.